

1

:  
(vacuum - assisted breast biopsy, )

: 678  
(611 ) (46 ) (21 )  
27 (7/46 ) (20/21 )  
(306/611 ) (33/39 )

: 55.6%(15/27 )  
, 231 (75.2%), 가 56 (17.8%), 19  
(5.7%)  
28 (85%), 4 (12%), 1 (3%) ,  
:

가

(hand - held device) 360  
가

Breast Imaging  
Reporting and Database System (BI - RADS) 4 가

가 가

가  
BI - RADS

가 가 4 3 가

(1 - 5).

(vacuum - assisted breast  
biopsy, ) (10 - 13).

가 (0 -  
25%)  
(6 - 9).

가  
(excisional, )

:

가 가 2% ,

가 가 가

가 가 가

가 가

가 가

가 (dead space) 가 ,

5 - 57

678

2002 3 2007 2

( ) 678 (BI - RADS 3 4)

19 - 65 ( , 42 )

0.4 - 3.4 cm ( 1.9 cm; < 1 cm 249 , 1 - 2 cm 315 , > 2 cm 114 ) 가 51%, 49% , 79% , 16% , 5%

678

BI - RADS 3 4a가 650 (95.9%), 4b가 26 (3.8%), 4c가 2 (0.3%) 가 4b , 가

가 (imaging - pathologic discordant, low - graded pathology) 가 가

가

가

가 7 27 가

HDI 5000 (Advanced Technology Laboratories, Bothell, WA, U.S.A.) 12 - MHz vacuum - assisted hand - held device (Mammotome Biopsy, Ethicon endosurgery INC, Johnson & Johnson Co. Cincinnati, OH) 1.5 cm 8 (158 ) 11 (520 )

2003 11 (Premium Surgiclip\* II M - 11.5, United States Surgical Corporation) 4 (14).

678

611 (90%) 386 , 181 , 7 , 5 , 4 , 4 , 24 , 46 (7%) 20 , 16 8 , 2 21 11 ( 9 , 1 , 1 ), 10 . 27 1 7 ( 5 , 2 ) , 21 1 20 40 가 27 가

(underestimation)가

611 306 (45%) 6 1 가 60 , 1 가 73 . 1

가 231 (75.2%)	가	,
가 56 (17.8%),		
가 19 (5.7%)	1	
가		
611 1	(interval change)	1 44
4a		6
0.5 cm		2
0.8 cm		
(		
)		
46 1		
33 ( 39		4 ,
678		
27 15 (55.6%,	7 4 ,	
20 11 )		
(Table 1).		
가 7 5		
(		)
(Fig. 1, 2). 27		
7 10		
(0/17 ).		
611		
306 1		

**Table 1.** Pathologic Results of Surgically Excised Tissue Corresponding to Mammotome Biopsy Site ( $n=27$ )

Postop. Pathology	Residual Lesion (+)	Residual Lesion (-)
DCIS	6	4
<sup>†</sup> ICA	5	5
*ADH/Phyllodes	4	3
Total (%)	15 (55.6 %)	12 (44.4%)

<sup>†</sup> ICA; Invasive carcinoma

(9 cases of invasive ductal carcinoma and 1 case of medullary carcinoma)

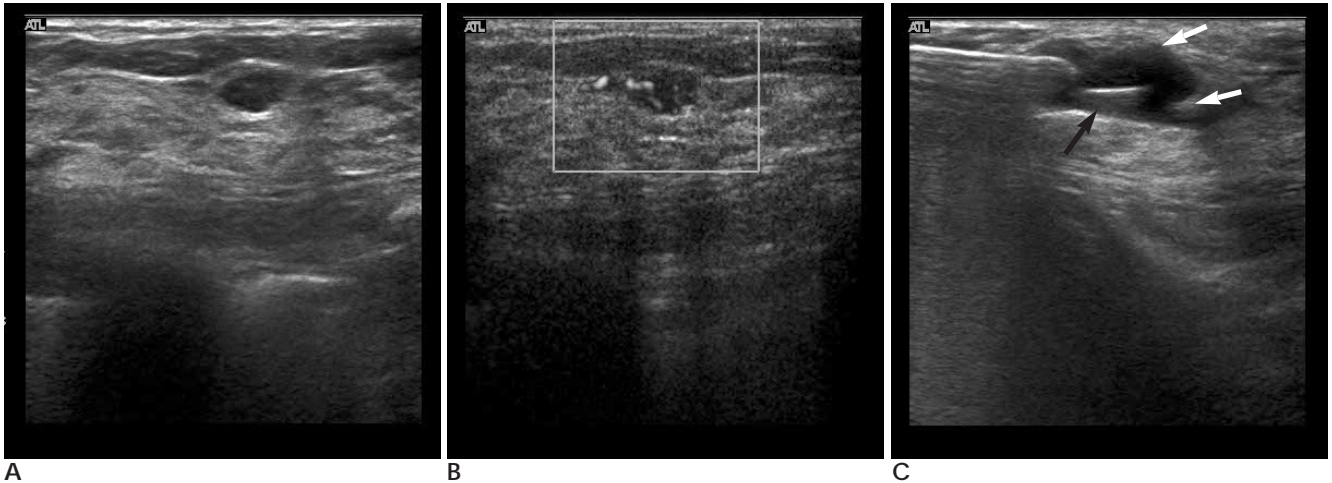
\* ADH/Phyllodes; Atypical ductal hyperplasia/ Benign phyllodes tumor

(5cases of ADH and 2 cases of phyllodes tumor)



**Fig. 1.** A case of histopathologically proven DCIS and ADH on mammotome and same result on surgical excision, but underestimated as ADH with papillomatosis on core biopsy.

Ultrasonography of a 48-year-old woman with a screening detected nonpalpable mass shows a 0.8 cm sized, well-defined round shaped, hypoechoic lesion with increased L/T ratio (A) and relatively high vascular signals compared to lesion size (B), this lesion was assessed as category 4b. 14-gauge core biopsy was performed and pathology was proved as intraductal papillomatosis and atypical ductal hyperplasia. Total removal of imaging evidence of the lesion on sonography with 11-gauge mammotome was done and titanium clip (arrow) was inserted (C), expecting upgraded pathologic result. Mammotome biopsy confirmed as ductal carcinoma in situ and atypical ductal hyperplasia. One month later, mastectomy was done and histopathology was reported same as the mammotome biopsy result and residual tumor cells were detected around the marker clip.



**Fig. 2.** A case of histopathologically proven DCIS in surgical specimen revealed residual cancer cells on mammotome biopsy site. Ultrasonography of a 42-year-old woman with a screening detected 0.5 cm sized, well-defined oval shaped, hypoechoic lesion (A) shows hypervascular signals on power Doppler image (B), assessed as category 4a. We thought it might be papilloma or ADH. The lesion was small and to prevent the underestimation of pathology, total removal of imaging evidence of the lesion with 11-gauge mammotome was done. Titanium clip (black arrow) was inserted into the blood filled biopsy cavity (white arrows) due to high vascular signals on Doppler image (C). Mammotome biopsy was confirmed as ductal carcinoma in situ. Patient wanted mastectomy rather than conserving surgery and pathology was proved same as the mammotome biopsy result and microscopic residual tumor cells were also detected around the marker clip.

1 2 ) (focal invasion)  
 28 (85%), 가 4 (12%), 가 “ 가  
 가 1 (3%), (underestimation) ”  
 1 6 가  
 1 12% 가  
 . 33 가  
 32 1 4 ( (27, 28). 가  
 ; 2.5 , 2 ; 23/39 ,) 가  
 . 가  
 . 가  
 가 Morris (29) 가  
 , (discordant) 가  
 , ( ) 가  
 가 가 가  
 , 가  
 가 (heterogeneity)  
 (underestimation) .  
 (concordant) (15 - 26). 가  
 가 가  
 가 (incisional)  
 (upgraded), (excisional) 가

25% (30 - 34),  
(35, 36).  
가 (37). 3% 41% 38% 60%, (43)  
Bedei (38) 가 12%(2/17 ) , (43) 5.7% 56%  
가 2 가 20 mm (41) 2.9 - 5.7%  
가 가 41 - 60%  
가 가  
가 가  
Lieberman (39) 4 3 BI - RADS  
(discordance) 가  
가 (10 - 13).  
가 (Cho) (40)  
14 11  
가 55%, 36% (27, 41, 44, 45).  
가 가  
가  
Grady (28) (41).  
(306/611  
) 1 1  
가 (33/46 )  
33%(6/18 ) 가 가  
가 , 가 가  
(0/29 ). Plantade (41)  
97.1% , 2  
0%(0/35 ) 가 가  
가 가  
7 10  
(0/27 ) (28),  
가 가가  
가 6 1  
6 1  
(histologic process)  
(15). 가 가 가 가  
Lieberman (39) 80%

(guideline)

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## The Role of the Use of US-guided Vacuum-Assisted Breast Biopsy for the Total Removal of Sonographic Evidence in Low- and High-Risk Benign and Malignant Breast Lesions<sup>1</sup>

Hyon-Joo Kwag, M.D., Shin-Ho Kook, M.D.

<sup>1</sup>Department of Radiology, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine

**Purpose:** To determine the role of the use of a US-guided vacuum-assisted biopsy for the removal of sonographic evidence (excisional mammotome) for low- and high-risk benign and malignant breast lesions.

**Materials and Methods:** We retrospectively reviewed the pathological results of 678 excisional mammotomes (611 low- and 46 high-risk benign and 21 malignant lesions). We compared the pathological results of the excisional mammotomes and the corresponding subsequent surgery of 27 high-risk benign (7/46 cases) and malignant (20/21 cases) lesions. We also reviewed the follow-up US findings of low- (306/611 cases) and high-risk benign lesions (33/39 cases).

**Results:** Fifteen of 27 (55.6%) surgical cases revealed a residual lesion on the excisional mammotome. There was no case of upgrade pathology seen for a surgical specimen. Follow-up sonography of 306 low-risk benign lesions showed a negative finding for 231 (75.2%) cases, post-biopsy changes in 56 (17.8%) cases, and residual lesions in 19 (5.7%) cases. None of the lesion was palpable. Follow-up sonography of 33 high-risk benign lesions revealed a negative finding in 28 (85%) cases, a post-biopsy scar in 4 (12%) cases, and a local recurrence in 1 (3%) case; none of the cases showed a residual lesion.

**Conclusion:** We suggest that an excisional mammotome can replace surgical excision for low-risk cases and may avoid the immediate surgery for high-risk benign lesions; however, surgery is crucial for a malignancy.

**Index words :** Breast, US  
Breast, biopsy  
Biopsies, technology  
Breast neoplasms, diagnosis

Address reprint requests to : Shin-Ho Kook, M.D., Department of Radiology, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, 108 Pyeung-dong, Chongro-gu, Seoul 110-746, Korea.  
Tel. 82-2-2001-2335 Fax. 82-2-2001-1030 E-mail: skook5@naver.com